

CLAIMS

We claim:

1. A solder for joining microelectromechanical components, wherein the solder comprises a eutectic mixture of gold and bismuth.

2. A microelectromechanical component having at least one soldering layer for joining to at least one further component, which component includes at least one soldering layer made from a solder comprising at least one of a eutectic mixture of gold and bismuth and a bismuth layer for producing a soldered joint with a gold layer.

3. The microelectromechanical component as claimed in claim 2, which includes soldering layers on opposite sides for joining to at least two further components.

4. The microelectromechanical component as claimed in claim 2, wherein at least one soldering layer, prior to the soldering operation, has a layer thickness of from 100 nm to 10 μm .

5. A microelectromechanical device, wherein a soldered joint including a solder comprising a eutectic mixture of gold and bismuth joins at least two components, wherein at least one component having one of an electrical functionality, a thermal functionality and a bonding functionality.

6. The microelectromechanical device as claimed in claim 5, wherein said soldered joint joins together two substrates, each substrate with thermoelectric material arranged thereon in the form of one of a Peltier cooler and a thermoelectric transducer.

7. The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to a laser diode circuit.

8. The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to a fluidic cell.

9. The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to an IDC structure as a humidity sensor.

10. The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to a heat sink.

11. The microelectromechanical device as claimed in claim 5, wherein at least one soldered joint joins a component to one of an optoelectronic amplifier, an optoelectronic modulator, an LED, a photodiode, a phototransistor and an optocoupler.

12. The microelectromechanical device as claimed in claim 5, wherein a joint is formed by means of submount technology using the solder.

13. A process for producing a microelectromechanical structure, the process comprising:

a) applying one of bismuth, gold and a mixture of bismuth and gold as first soldering partner to a first side of a soldered joint, and

b) producing a eutectic soldered joint by combining the first solder partner with a second solder partner comprising one of gold, bismuth and a mixture of gold and bismuth under the action of heat.

14. The process as claimed in claim 13, further comprising applying gold as the second solder partner to a second side of the soldered joint, wherein bismuth is the first solder partner.

15. The process as claimed in claims 13, wherein at least one layer of the soldered joint is applied using one of evaporation coating, sputtering and molecular beam epitaxy.

16. The process as claimed in claim 13, wherein at least one layer of the soldered joint is produced using one of a CVD process and by the application of a paste.

17. The process as claimed in claim 13, wherein patterning of at least one layer of the soldered joint is performed by one of dry etching and wet etching.

18. The process as claimed in claim 13, wherein patterning of at least one soldering layer of the soldered joint is performed using a solder as part of a lift-off process.

19. An assembly including a first structure connected to a second structure by a solder joint, wherein the solder joint comprises a eutectic mixture of gold and bismuth.

20. An assembly including a first structure connected to a second structure by a solder joint, wherein the solder joint consists of a eutectic mixture of gold and bismuth.

21. A method for joining a first structure to a second structure, the method comprising:

forming first and second solder partners on the first and second structures, respectively, wherein the first solder

partner comprises gold and the second solder partner comprises bismuth;

connecting the first and second structures such that the first solder partner contacts the second solder partner; and

heating the first and second solder partners such that the first and second solder partners form a eutectic mixture of gold and bismuth.